



SLOVENSKI STANDARD

SIST EN 23923-1:2000

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Metallic powders - Determination of apparent density - Part 1: Funnel method (ISO 3923-1:1979)

Metallic powders - Determination of apparent density - Part 1: Funnel method (ISO 3923-1:1979)

Metallpulver - Ermittlung der Füllichte - Teil 1: Trichterverfahren (ISO 3923-1:1979)

Poudres métalliques - Détermination de la masse volumique apparente - Partie 1: Méthode de l'entonnoir (ISO 3923-1:1979)

Ta slovenski standard je istoveten z: EN 23923-1:1993

ICS:

77.160

Metalurgija prahov

Powder metallurgy

SIST EN 23923-1:2000

en

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EUROPEAN STANDARD

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NORME EUROPÉENNE

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April 1993

UDC 621.762:669-492.2:620.1:531.755

Descriptors: Powder metallurgy, metallic powder, bulk density, density measurements

English version

**Metallic powders - Determination of apparent
density - Part 1: Funnel method
(ISO 3923-1:1979)**

Poudres métalliques - Détermination de la masse
volumique apparente - Partie 1: Méthode de
l'entonnoir (ISO 3923-1:1979)

Metallpulver - Ermittlung der Füll-dichte - Teil
1: Trichterverfahren (ISO 3923-1:1979)

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This European Standard was approved by CEN on 1993-04-02. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

In 1992 ISO 3923-1:1979 "Metallic powders - Determination of apparent density - Part 1: Funnel method" was submitted to the CEN Primary Questionnaire procedure.

Following the positive result of the CEN/CS Proposal ISO 3923-1:1979 was submitted to the CEN Formal Vote. The result of the Formal Vote was positive.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 1993, and conflicting national standards shall be withdrawn at the latest by October 1993.

According to the Internal Regulations of CEN/CENELEC, the following countries are bound to implement this European Standard :

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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Endorsement notice

The text of the International Standard ISO 3923-1:1979 was approved by CEN as a European Standard without any modification.

NOTE: The European references to international publications are given in annex ZA (normative).

Annex ZA (normative)
Normative references to international publications
with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 3923-2		Metallic powders - Determination of apparent density - Part 2: Scott volumeter method	EN 23923-2	
ISO 3923-3		Metallic powders - Determination of apparent density - Part 3: Oscillating funnel method	EN 23923-3	

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International Standard



3923 / 1

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Metallic powders — Determination of apparent density — Part 1 : Funnel method

Poudres métalliques — Détermination de la masse volumique apparente — Partie 1 : Méthode de l'entonnoir

Second edition — 1979-11-15

Corrected and reprinted —

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UDC 621.762 : 669-492.2 : 531.755

Ref. No. ISO 3923/1-1979 (E)

Descriptors : pulverulent products, metallic powder, determination, bulk density, funnels.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 3923/1 was developed by Technical Committee ISO/TC 119, *Powder metallurgy*.

This second edition was submitted directly to the ISO Council, in accordance with clause 5.10.1 of the Directives for the technical work of ISO. It cancels and replaces the first edition (i.e. ISO 3923-1977), which had been approved by the member bodies of the following countries :

Australia	Germany, F. R.	Spain
Brazil	Italy	Sweden
Bulgaria	Japan	Turkey
Canada	Mexico	United Kingdom
Czechoslovakia	Poland	USA
Egypt, Arab Rep. of	Portugal	USSR
France	Romania	Yugoslavia

No member body had expressed disapproval of the document.

Metallic powders — Determination of apparent density — Part 1 : Funnel method

1 Scope and field of application

This part of ISO 3923 specifies the funnel method for the determination of the apparent density of metallic powders under standardized conditions.

The method is intended for metallic powders that flow freely through a 2,5 mm diameter orifice. It may, however, be used for powders that flow with difficulty through a 2,5 mm diameter orifice but flow freely through a 5 mm diameter orifice.

Methods for the determination of the apparent density of powders that will not flow through a 5 mm diameter orifice are specified in Parts 2 and 3 of this International Standard.

2 References

ISO 3923/2, *Metallic powders — Determination of apparent density — Part 2 : Scott volumeter method.*¹⁾

ISO 3923/3, *Metallic powders — Determination of apparent density — Part 3 : Oscillating funnel method.*¹⁾

3 Principle

Measurement of the mass of a certain quantity of powder, which in a loose condition exactly fills a cup of known volume.

The loose condition is obtained by using, when filling the cup, a funnel placed at a determined distance above the cup.

The ratio between the mass and the volume represents the apparent density.

4 Symbols and designations

Symbol	Designation	Unit
ρ_a	Apparent density of metallic powders (General term)	g/cm ³
ρ_{ac}	Apparent density obtained by the funnel method	g/cm ³
m	Mass of the powder	g
V	Volume of the cup	cm ³

5 Apparatus

5.1 Funnels, one having an orifice of diameter $2,5 + 0,2$ mm and the other an orifice of diameter $5 + 0,2$ mm; see figure 1.

5.2 Cylindrical cup, having a capacity of $25 \pm 0,05$ cm³ and an internal diameter of 30 ± 1 mm.

NOTE The cup and funnels should be made of a non-magnetic, corrosion-resistant, metallic material having sufficient wall thickness and hardness to avoid distortion and excessive wear. The inner surfaces of the cup and funnels should be polished.

5.3 Balance, of sufficient capacity, capable of weighing the test sample to an accuracy of $\pm 0,05$ g.

5.4 Stand and horizontal vibration-free base, to support the cup and funnel, the stand holding the orifice of the funnel 25 mm above the top surface of the cup and coaxially with it; see figure 2.

6 Sampling

6.1 The test sample shall be of at least 100 cm³ volume to allow the determination to be carried out on three test portions.

1) At present at the stage of draft.